

Wilderness is . . .



***. . . a damp dreary place where all
manner of wild beasts dash about uncooked.
Anonymous, 19th Century***

Unassisted Recovery at Annapolis Rocks: The Appalachian Trail's Most Severely Impacted Campsites



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Presentation Objectives

- 1. Provide a brief overview of an adaptive management research study designed to minimize camping impacts.**
- 2. Characterize the extent of unassisted recovery on highly disturbed campsites closed to camping use.**

Resource Protection and Recreation Provision

The Dual Mandates

The National Park Service shall:

... promote and regulate the use of the ... National Parks ... to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them *unimpaired* for the enjoyment of future generations.

National Park Service Organic Act of 1916

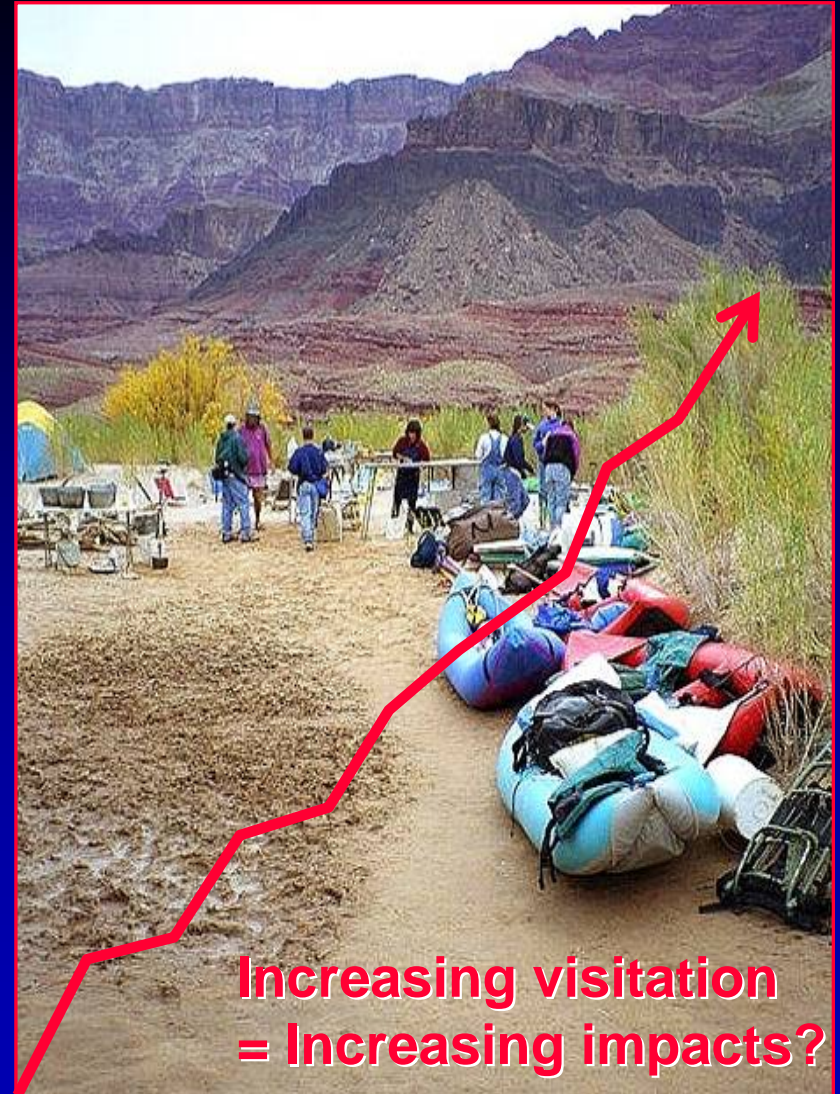
Wilderness shall:

... be administered for the use and enjoyment of the American people in such manner as will leave them *unimpaired* for future use and enjoyment as wilderness ...

The Wilderness Act, 1964

Loving Our Public Lands To Death?

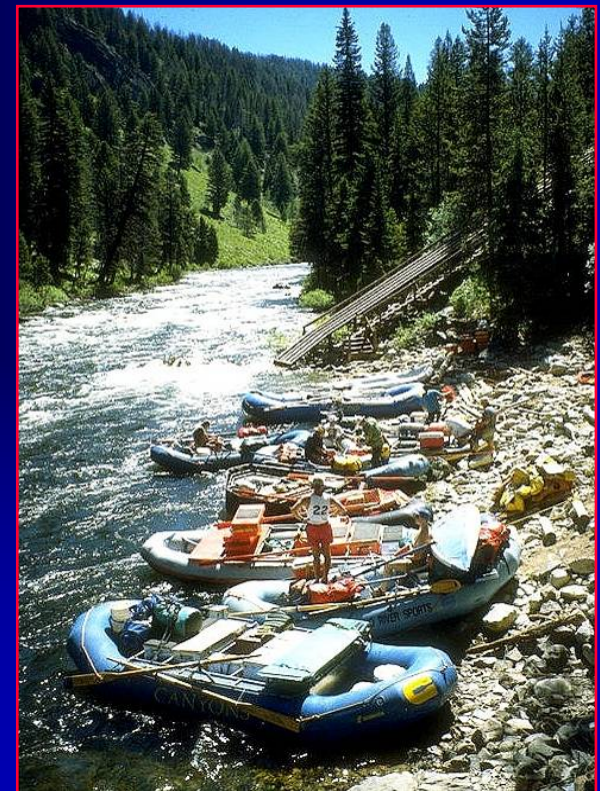
- **National Park Service visitation increased from 33 million in 1950, to 172 million in 1970, to 287 million in 1999.**
- **Combined visitation to undeveloped public lands was estimated at 670 million in 1992.**



**Increasing visitation
= Increasing impacts?**



***If recreation
visitation
is permitted ...***

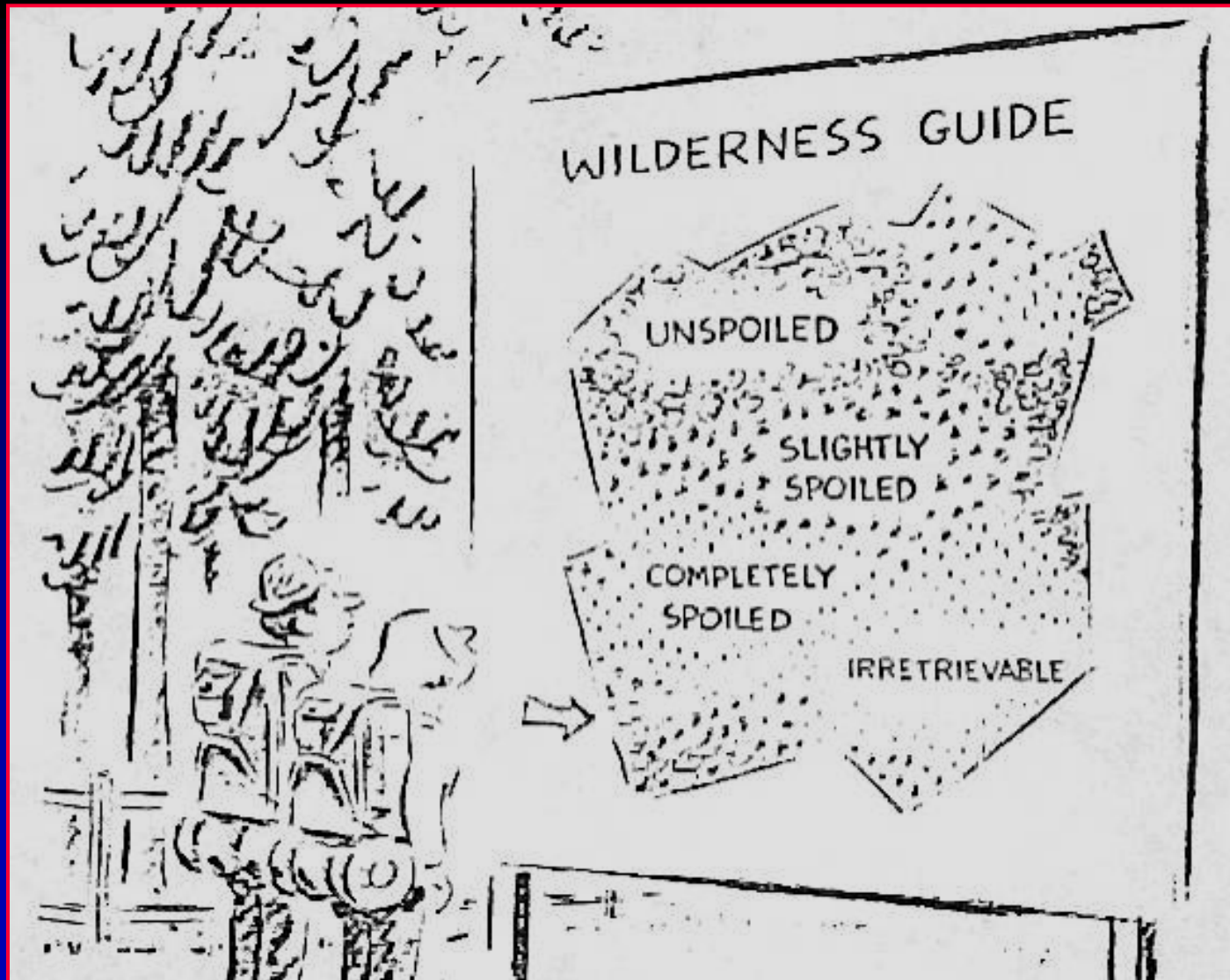




... some degree of resource impact is inevitable.



What level of impact are we willing to accept?



Science Can Assist

- “Visitor use will be managed to avoid unacceptable impacts on park resources or adverse effects on visitor enjoyment of appropriate recreational experiences.”

NPS Management Policies

- **Recreation Ecology:** Scientific field of study that evaluates visitor impacts to protected areas and their relationships to influential factors.

The Biocentric Perspective ... is rarely an option!



Annapolis Rocks Case Study

- Part of a larger Appalachian Trail study that examined camping impacts at high use destinations.
- A principal recommendation was to apply a new camping management practice: conversion to side-hill campsites.
- As part of an adaptive management study, existing campsites at the two most severely impacted locations along the A.T. were closed and replaced by carefully designed side-hill campsites.
- Success in enhancing resource protection and visitor experiences was evaluated.



**Full parking lot and
roadside parking on
a busy weekend.**

Crowds on the cliffs.

Camping impacts:

19 campsites

43,063 ft² of disturbance

23,116 ft² exposed soil

Problems:

Poor site selection

Campsite proliferation

Campsite expansion

Resource – highly impacted

Social – crowding & conflicts





Camping impacts:

137 tree stumps

83 damaged trees

159 informal trails



Camping impacts:

32 campfire scars

Litter

Human waste





Social Conditions:

Crowding

Conflicts

Aesthetics

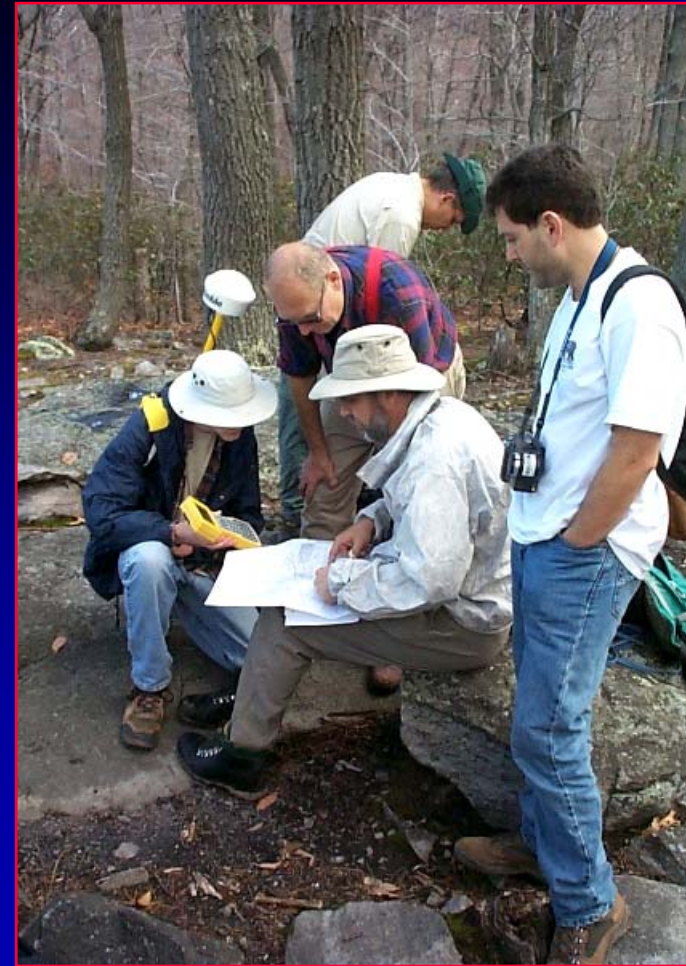
Annapolis Rocks Case Study

Resource Conditions Study

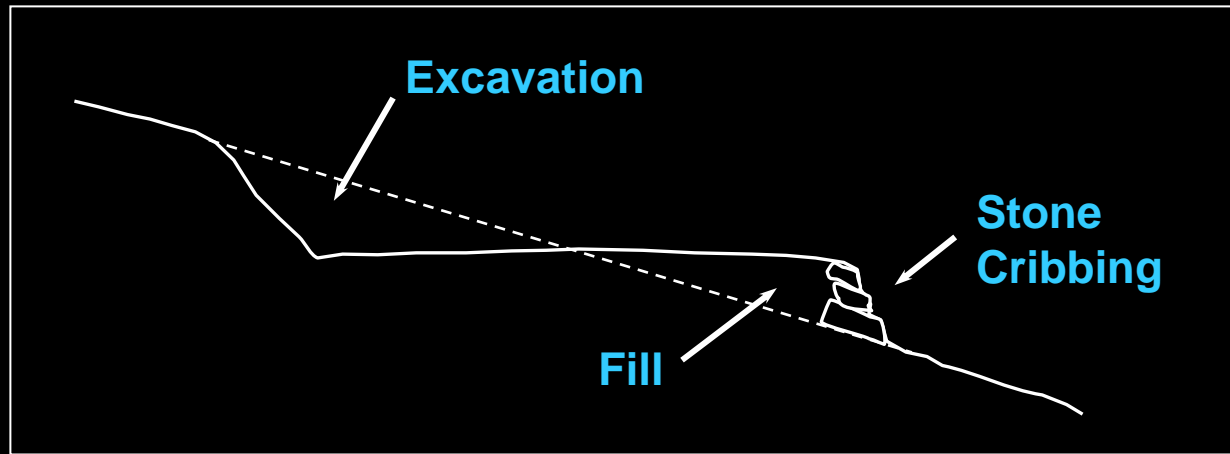
Closed 19 visitor-created campsites; designed and constructed 13 replacement campsites. Evaluated conditions on all sites for 3 years.

Social Science Study

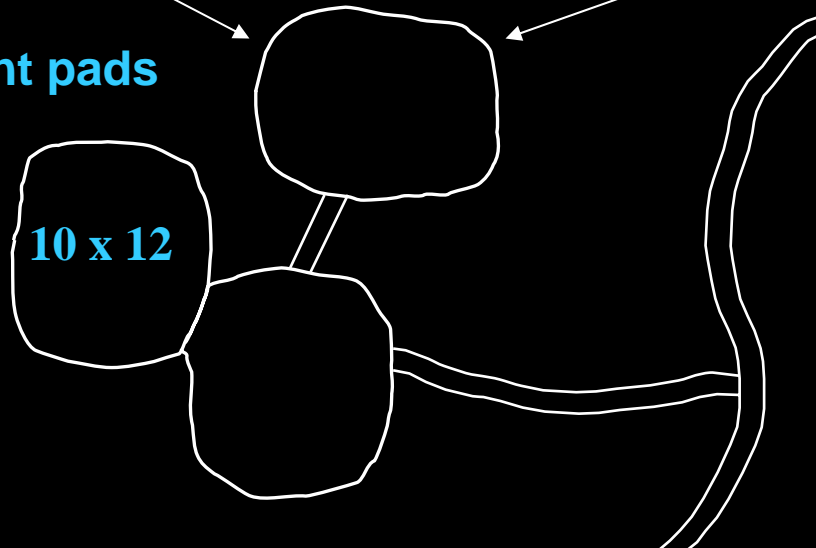
Surveyed overnight visitors before and after the conversion to evaluate visitor satisfaction and changes in experiential conditions.



Side-hill Campsites in Sloping Terrain



Campsite w/3 tent pads



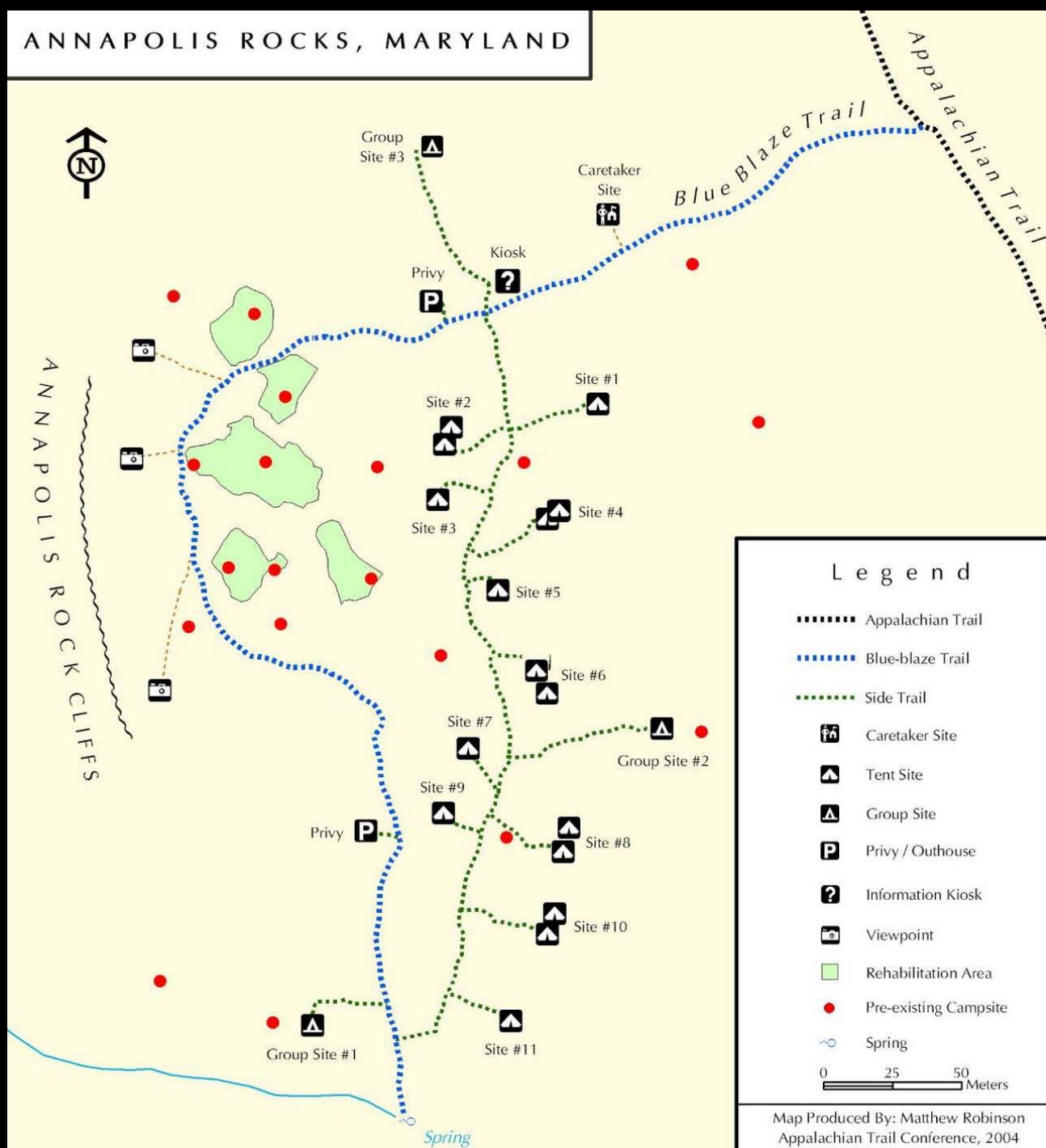
Campsite Construction



Side-hill Campsites

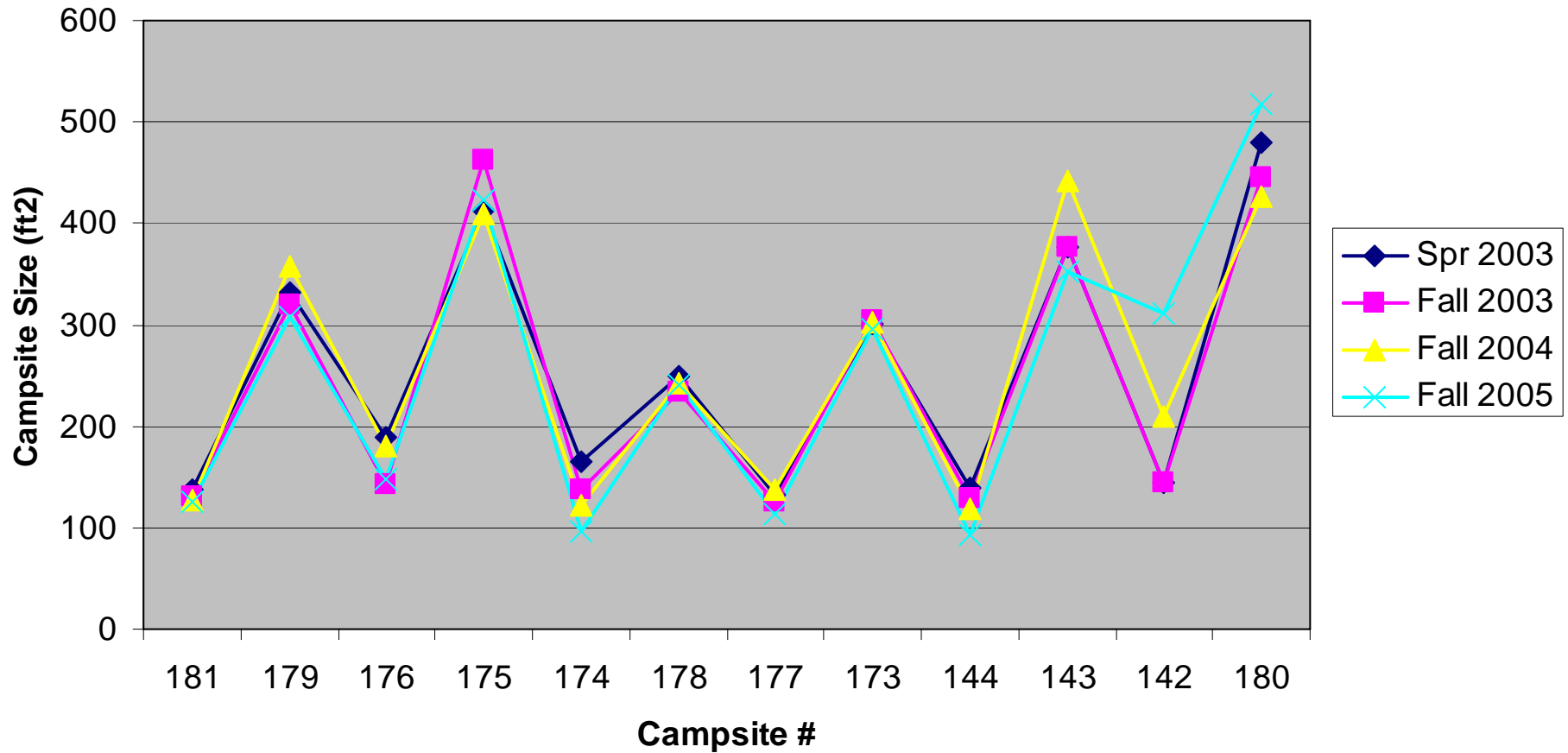


ANNAPOLIS ROCKS, MARYLAND



Results: New Campsites

Constructed Side-hill Campsites - Changes in Site Size



$P > 0.05$, T-tests against constructed site sizes, paired T-test



**New side-hill
campsites after
3 years of use**

Aggregate Sizes (ft²)

Side-hill sites:

Spr 2003: 3,059

Fall 2005: 3,025

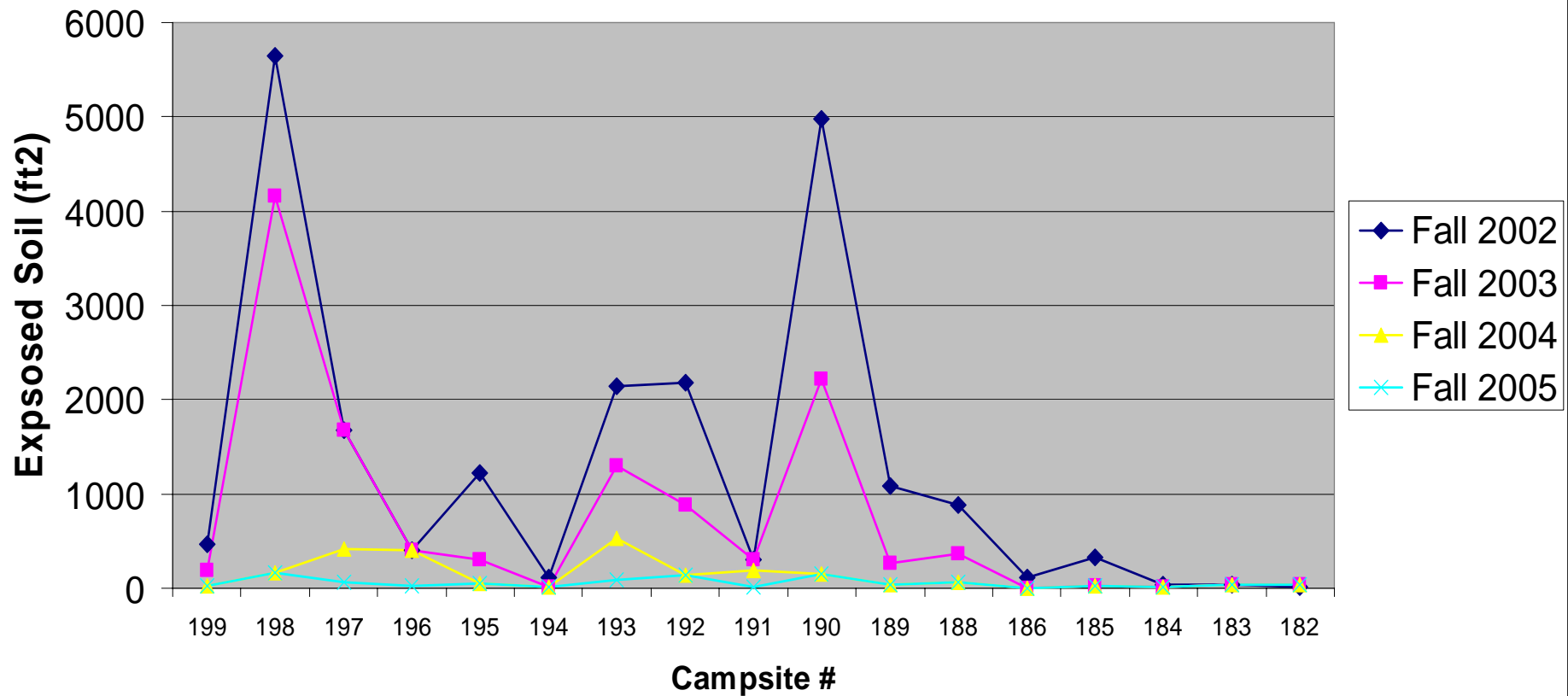
Closed sites:

Fall 2002: 38,427



Results: Closed Campsites

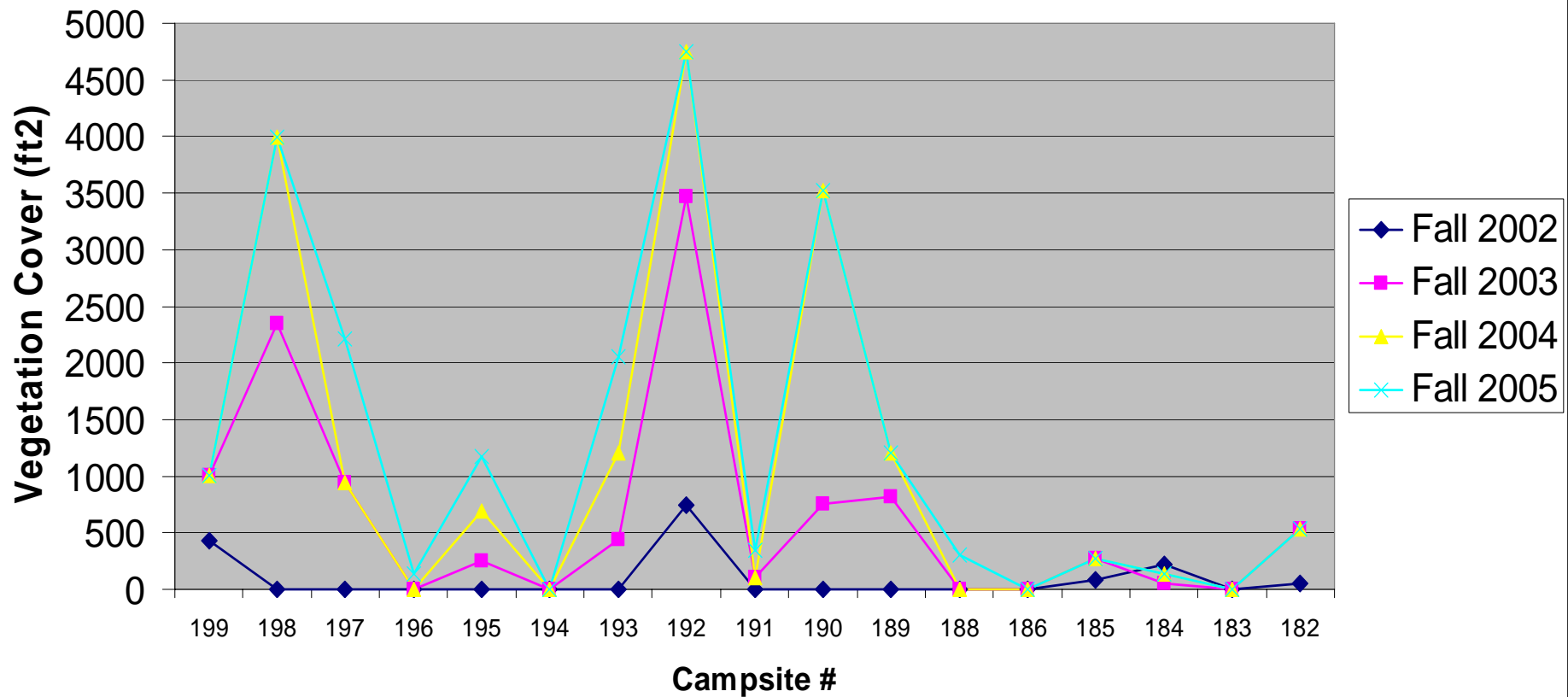
Closed Campsites - Changes in Exposed Soil



$P < 0.05$, T-tests against pre-closure soil exposure, paired T-test

Results: Closed Campsites

Closed Campsites - Changes in Vegetation Cover



$P < 0.05$, T-tests against pre-closure vegetation cover, paired T-test



Vegetative recovery is mostly grasses with cover strongly correlated to sunlight exposure.





**Vegetative recovery on
shady sites is mostly
mosses. Note lack of tree
and shrub regeneration
on all sites.**

Results: Social Science

Table 2 Mean satisfaction with campsite indicators before and after treatment^a

Indicators	Pre	Post	Difference
Utility			
a) Number of campsites available	3.96	4.11	0.15
b) Size of my campsite	3.98	3.83	-0.15
p) Ability to camp near members of my group	4.15	3.95	-0.20
q) Freedom to choose a preferred campsite	4.17	3.88	-0.28*
r) Restrictions on where I can camp	3.65	3.40	-0.25
s) Distance from my campsite to the spring	3.87	4.07	0.21
u) Slope of the tenting surfaces	3.91	3.89	-0.02
v) Smoothness of the tenting surfaces	3.75	3.70	-0.06
Environmental			
c) Amount of bare soil on my campsite	3.27	3.60	0.33*
d) Condition of trees on my campsite	3.76	4.17	0.41**
e) Amount of ground vegetation cover near my campsite	3.44	3.83	0.39**
f) Naturalness of my campsite	3.63	3.94	0.32*
g) Naturalness of the area near my campsite	3.71	4.18	0.47**
h) Attractiveness of my campsite	3.75	4.06	0.31*
Social			
i) Number of people camped near me	3.31	4.23	0.93**
j) Privacy of my campsite	3.26	4.30	1.04**
k) Noise from other groups	3.27	4.21	0.94**
l) Interactions with other groups	3.63	4.05	0.42**
m) Behavior of other groups	3.46	4.09	0.62**
n) Number of day users near my campsite	3.49	3.96	0.47**
o) Security of my belongings at my campsite	3.81	4.23	0.42**
t) Distance from my campsite to other sites	3.68	3.98	0.30*
w) Overall impression of my campsite	4.19	4.19	0.00

^aIndicator scores are based on a scale of 1 (highly dissatisfied) to 5 (highly satisfied)

* $P < 0.05$, ** $P < 0.01$ based on independent t -tests

A person stands in silhouette on a dark ridge, looking out over a vast landscape at sunset. The sun is a large, bright yellow-orange orb on the horizon, casting a warm glow across the sky. The sky transitions from a deep orange near the horizon to a dark blue at the top. In the distance, a range of mountains is visible as dark silhouettes against the bright sky. On the left side of the frame, the dark silhouette of a tree with several branches is visible. The overall mood is peaceful and contemplative.

The End

Happy camping and remember to . . . *Leave No Trace !*